

Statistical Modeling of Labor-Intensive Service Systems

Haipeng Shen

Department of Statistics and Operations Research
University of North Carolina at Chapel Hill

haipeng@email.unc.edu

Labor-intensive service operations, such as Telephone Call Centers or Emergency Departments in hospitals, are traditionally analyzed as queueing systems using mathematical queueing models. Recently, statisticians started to supplement these mathematical models with theoretically-interesting and practically-relevant statistical analysis. This is enabled by the availability of transaction-level (or call-by-call) data bases.

Empirical analysis of such data has validated in some cases, and refuted in others, the applicability of existing queueing models to such operations. This has also stimulated the development of further models that capture previously unaccounted-for phenomena, such as arrival-rate uncertainty and server heterogeneity. I shall present some ongoing research aiming at addressing such phenomena and understanding their impacts on workforce management.